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With the Author's Compliments

On the Radical Cure of Inguinal Hernia.

A Review of the Existing Status of the
Operation, with Remarks on its
Past History.

BY

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ON THE RADICAL CURE OF INGUINAL HERNIA. A
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Few subjects are more attractive to the surgeon than that of hernia, whether viewed from the standpoint of pathology or that of surgical therapeutics. The ablest surgeons in past ages, as I shall presently show, devoted much of their attention to the subject, and although time has passed, and tome and thesis become dusty with age, and in many cases the theories themselves misty with the changes of time, and in others laid forever at rest by the solid anatomical facts hurled against them, there has been a golden thread of truth extending from the earliest time to our day. But this thread, however bright and shining, is only a thread; and while some things are proved concerning the guiding principles of the operation, yet the disease continues to afflict mankind, and until the ushering in of antiseptic cleanliness in all operations, the weight of surgical opinion in our day was against the attempt to cure hernia. Several such periods have come and gone in the history of this operation, and while nothing in history of the past may seem to warrant the disturbance of the present surgical lethargy, yet it is worth while to get our bearings, as the mariner takes a reckoning to find out where he is and to determine his future course.

Dr. Morell Mackenzie must have been secretly thinking of hernia when he commenced writing that able article in a recent number of the *Fortnightly Review*, entitled "Is Medicine a Progressive Science?" Let us then get our bearings; take from unused shelves the musty records of former surgeons,

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and having found where we are, let us see if some headway may not be made to remove the reproach. That the disease is sufficiently prevalent to be of interest Heaven knows. Dr. Baxter's tables show that out of 334,321 recruits and substitutes examined by the recruiting officers during the war of the rebellion, more than 17,000 were rejected on account of hernia. George Hamilton, of Liverpool, estimated that in England alone there were one and a quarter millions of persons suffering from hernia, and 88 per cent. of these hernias are inguinal. The London Truss Society, during the first twenty-eight years of its existence, had issued over 83,000 trusses to the ruptured in the city of London alone, and from information received by me since this paper was commenced, I find that two factories in the city of Philadelphia manufacture and sell from 216,000 to 250,000 trusses per annum! Nor do all the ruptured wear even this badge of incurability. Think of all the old incarcerated hernias and concealed hernias, where trusses cannot be worn, and where from fear of pain or from penury the patient will not or cannot buy a truss! Let surgery, then, apply itself anew to the task before it; for there is yet a world to conquer. Let it not be dismayed by the fatalistic evolutionists who hold that the weakness of the abdominal walls is a certain evidence that man has been evolved from beasts which did not walk erect, and that in the fulness of time when man has been long accustomed to walk upright, the abdominal walls may become tougher, or enveloped in a cartilaginous or bony case. It may be considered a little impatient, but I for my part have no desire to wait. I wish to stimulate experiment and inquiry, and when the dawn of that time shall come for which evolutionists sigh, when man shall be physically perfect, and it shall be said of this beautiful city, as of Troy—Chicago was—let it also be said of this disease: there was once a question as to how to cure a very painful and fatal disease, now happily obsolete, but the surgeons of that day settled it. This much is introductory; let us now briefly look up the history of the past, which, thanks to the labors of Sprengel and others by whom it has been compactly and succinctly stated, the task is an easy one.

HISTORY.

Celsus was the first surgeon to fully define the tunics of the scrotum and testicle, and he had definite ideas about the operation for the cure of hernia. He used cauterization and a bandage, probably a spica. Sprengel thinks Celsus borrowed his notions from Alexandria, for Leonidas of Alexandria had exploded the doctrine of the rupture of the peritoneum, and taught the practice of cauterization; he also in some cases scarified the parts and used astringents.

Paulus, who followed Celsus in almost paraphrastic terms, did not mention him, and the able translator of Paulus (Francis Adams), remarks, "But when did a Greek writer ever acknowledge himself under obligations to a Roman?" Thus, if you will pardon the digression, you will see that the Eastern custom of ignoring the progressive West, of which custom some of you may have heard of late, is of rather ancient date.

The Arabians, Hali Abbas and Ali, the son of Abbas, used astringents as topical applications, and in severe cases they practiced the actual cautery.

Ligature of the sac had been practiced from an early day, and Paulus and his Arabian followers described the operation. The red hot iron for many centuries was the favorite remedy.

Maupas was the first who recorded himself in favor of making a straight incision directly through the rings, performing a gastrorrhaphy, and stitching up the wound.

Lafranc, who flourished in 1296, favored castration according to the ancient methods, and the fastening of the stump as a plug in the wound. He, however, had three methods, one the thrusting of red-hot needle points into the tissues about the hernia, and he invented the first compression forceps, or clamp. Guy de Chauliac, while criticizing the methods of his predecessors, and also that of a certain Bernard Metis who, before completing his incision, tied the cord with a gold thread, the modern point Dore, still believed in the caustic, and occasionally the arsenical paste. He recommended rest in bed and strong compression. It was desirable, in the opinion of surgeons of that period, to provoke suppuration at the ring.

The method of operating for the cure of hernia being nearly always accompanied with ablation of the testicle, now fell into disuse, and quacks alone practiced any of these operations. A traveling Spanish hernia-cutter was brought to the notice of Alexandre Benedictus, who performed some happy cures by the use of a silk seton, fastened to an ivory button. The same inhabitants of higher Italy who were celebrated in the Middle Ages for stone-cutting, were also very successful as traveling herniotomists, if contemporaneous accounts may be believed, and the methods were kept a profound secret; but as late as 1633 Jean Baptiste Cortesa relates that he saw at Messina a certain Ulysse de Norcia apply a caustic substance, the parts consumed by it, and a very deep scar result. Joseph Covillard saw a "vagabond" cure a hernia by caustics and the ligature. (Sprengel).

Some of these peripatetic herniaotomists, after opening the sac, replaced the testicle in the abdomen, and drew the ring together with a gold thread. Scultetus relates that in his time the anabaptists frequently performed this operation in a similar manner. Fallopius practiced the ligature and castration. He did not object to the methods of his predecessors, but limited and modified them. He restored the gut after incision, by taxis and the use of oil of rose with white of egg; he used gold thread when he ligated the cord, and he scarified the rings. Ambroise Pare was the first to absolutely abandon castration. He used astringents, a bandage with iron filings to the surface as a counter-irritant, and powdered iron in the wound. He performed gastrorrhaphy in aggravated cases, and introduced a gold wire to separate the cord from the intestines.

About this time the treatise of Pierre Franco appeared, which in the light of modern anatomy once more dissipated the ancient error that hernia was always accompanied with a rupture of the peritoneum.

Freytag, a Zurich surgeon, was the first to practice dilatation of the rings in strangulated hernia, having first made incision. He then attached the peritoneum to the ring with numerous sutures.

Abraham Cypriaan, of Amsterdam, systematically dilated the rings with the finger until reduction was effected in the case of strangulated hernia, then with

a two-edged knife he separated all the tissues about the ring and canal.

Nicholas le Quin, of Paris, and his nephew Antoine le Quin, appear to have introduced the truss about the year 1680, although the spica bandage had been used from the earliest times. In the time of Louis XIV operative procedures by the faculty had once more fallen into disuse, and the quacks reaped a harvest. A prior of Languedoc, named Cabrieres, communicated to the monarch under promise of secrecy during his life time, an infallible mixture which was never-failing in its power. This secret, when brought to light, was found to consist in the administration of muriatic acid diluted with red wine, and the external application of a pitch cerate under pressure.

Dionis wrote a thesis on this subject in which he recommended the opening of the sac with caution; he taught the principle of dilatation of the ring, and he tied the omentum. After the operation he introduced into the ring a large dossil soaked in yolk of egg and oil, kept it in place by a compress of charpie adjusted by a spica bandage.

Vauguyon was a close follower of Dionis, but he described the technique of the operation in more detail. He used the grooved director, not only for raising the tissues for division, but also for dilating the ring. He, after the restoration of the intestine, scarified the ring, and applied a bandage like Dionis. The long controversy as to whether the peritoneum was really ruptured or not, was not settled until the beginning of the eighteenth century.

Michel Louis Renelaulme de la Garanne, while insisting there was a rupture of the peritoneum, operated in all cases except those of incarceration, by the operation as performed by Dionis; he used in addition to the ordinary bandage, a suspensory bandage. This was, many years later, brought forward by Mayor as a new procedure.

While French surgeons had thus come to follow a definite line of practice in these cases, the rest of the world, so far as known, still followed the Celsian plan of castration with cauterization.

Françoise Wiedeman, in 1719, was the first German to defend the new treatment of hernia adopted

in France at this period. Jean Henry Freytag, of Switzerland, in 1721 rejected the castration and as well the point Dore. He still favored the scarification as practiced by his father, Jean Conrad Freytag, and recommended the excision of the projecting portion of the omentum, when necessary.

Mauchard in operating recommended that the bisection be held flatwise (after the sac had been opened carefully), and he did not raise the membrane with the cellular tissue, when he had pierced the peritoneum, he introduced a sound, lifted the membrane and examined the state of the intestines. He then scarified the ring, and tied the sac with a waxed thread.

Heister recommended a truss, which, upon reference to the plate, is seen to be an oval pad attached to a strap, evidently intended to buckle around the waist.

He approves of Petit's operation; by this operation Heister says Petit cured a "tailor who was well within five days of the operation." Heister, however, advises that the bandage alone be trusted in large hernias. Incarcerated hernias he endeavored to reduce by the taxis, and having done so, he applied the "spica bandage, which should not be left off by the patient for many years, and if he be old, it should be worn during life. I have sometimes known a clyster of the smoke of tobacco succeed in relaxing the parts, when others have failed." "A large clyisma fumosum," he says, "of the common English or weak tobacco was injected into a poor patient under this disorder, but with no effect, but the smoke of strong Virginia tobacco quickly gave the patient a stool, and the prolapsed intestines soon returned into the abdomen of themselves." Heister, it is to be observed, when he did operate, anticipated certain so-called antiseptic precautions, by the cleanliness he required, and the shaving of the groin as preliminary to the operation. He always opened the sac and returned the hernia, without division if he could; if practicable, he divided the ring with care and applied the pledget or dossil of lint and a spica bandage; but then, as now, there were many attempts to escape the knife, the bandage, and the truss, and John Douglass states, in his "Syllabus of Chirurgical Operations," that a man named Little-

John made great reputation throughout England by a secret remedy for which he was paid five thousand pounds by King George the First, who also added to this sum an annual pension of five hundred pounds. When this remedy was promulgated, it was found to be cautery with sulphuric acid; and when the granulations sprung up they were touched with the *lapis infernalis*. A bandage to retain a plaster on the cicatrix completed this rather too highly appreciated discovery. If Little-John had lived in this day he might easily have increased his emoluments by starting a "sanitarium." We recognize this cauterization plan as an old acquaintance. And so the changes have rung, the same old story with but few variations from Celsus down. I will not weary you with continuing in this history an account of the methods of Alexander Monroe, Jean Georges Wagner, of Lubek, Lafay, Samuel Sharp, and Taccooni, for they were all simply modifications of the preceding plans. It was not until near the middle of the eighteenth century that surgeons began to cut off the gangrenous portions of intestines in cases of strangulated hernia. Claud Amyand, Montabourg, Peyronie, Ramdohr, Mery, were among the first to practice and recommend this procedure.

The glance we have thus given at what may now be termed ancient surgery of hernia, shows clearly enough how little may be hoped for as new, and yet how infinite the variations of the few fixed principles. If I do not quote, among the moderns, Percival Pott, Sir Astley Cooper, Benjamin Bell, Mohrenheine, Barthol and Saviard, Robertson, Dessault and Cline, it is simply because these excellent surgeons, some of them masters, simply threshed the old straw. The Spanish surgeon Antoine de Gimbernat, in his "new method" of operating in crural hernia, Madrid, 1793, did develop some originality in description of the anatomy of crural hernia, but the field seemed to be worked out. Little change in opinion or sentiment took place until about 1840, when the method of creating inflammation of the whole canal by injection was again brought into notice, but it will now be more convenient and easy to follow if the different operations are adverted to seriatim.

Castration, first proposed by Celsus, and, as seen

in the foregoing section, followed by surgeons for several centuries, has been long abandoned, although in cases where the hernia co-exists with disease of the testicle, as in the case reported by Nott, of Mobile, in 1847 (in which the lead wire was used), castration may very properly be an accompaniment of the operation.

Cauterization was formerly used by the Moxa to the surface, by red-hot irons, and by red-hot needles thrust into the tissues, and by mineral acids. Almost every known caustic has at some time or another been used for the cure of hernia. The galvano-cautery was proposed by Dr. John C. Minor, of New York (*Am. Jour. Electrology and Neurology*, 1879).

Topical Applications.—These have been the favorite remedies of charlatans in all ages, and have been occasionally used by the faculty, but being utterly unscientific in principle, are now abandoned.

Ligature of the Sac.—This operation is now practiced in connection with the so-called "antiseptic" operation, but in the modern operation the sac is opened, while in that of the ancients the sac was frequently ligated without opening. Ambroise Paré is erroneously given the credit of the priority in this procedure. Malgaigne speaks of various kinds of ligature, including catgut. The elastic ligature has been brought forward. Molliere, in "Memoires Société des Lyons, 1877," proposed to occlude the neck of the sac by the elastic ligature. His conclusions were that the ligature of the sac was usually necessary and gradual ligature was the best method, and, in passing, it is proper to revert to the fact that Paulus Ægineta proposed and practiced sac ligation. Gal-laud, in 1878, favored the elastic ligature.

The Royal Suture.—The sac being entirely exposed, it was raised and stitched, after which the portion outside the suture was cut away. The term "royal" is somewhat whimsically said to have proceeded from the fact that the King's subjects were saved thereby.

Scarifications.—This practice is a very ancient one, and has been occasionally practiced down to a very recent date, with excellent results. These scarifications were at first practiced on the sac alone, but finally on the pillars and the entire canal. Dr. G. N. Fitch, of Chicago, in 1845 scarified the neck of

the sac and produced a cure (*Indiana and Illinois Medical Journal*, N. S., Vol. IV). Guerin was probably the first to practice subcutaneous scarification. The so-called Heatonian method has, as one of its advantages, that the tissues about the pillar and canal are punctured.

Invagination (a) Without Suture.—This practice has for its object the occlusion of the inguinal ring by the fascia and sometimes by the integuments. Leroy D'Etoilles proposed invagination without suture, the invagination to be retained by a plug of rubber and retained by a bandage. Aitchison, in the *Indian Lancet*, September 15, 1860, proposed to invaginate the scrotum by a rubber tube carried into the ring by a solid plug. The plug was then to be withdrawn and the tube filled with air and retained with a bandage. This method he claimed could be used with or without suture, but this procedure was in fact long antedated by the truss pad of Dr. P. H. Cabell, of Alabama, who had constructed a truss pad with what he called a "finger-like process." (*Virginia Medical and Surgical Journal*, vol. iv, 1855.)

Invagination (b) with Suture has been practised for a longer period, and has been very successful. It in principle forms the basis of many of the more famous operations, such as Gerdy's and Wutzer's. In Gerdy's operation the scrotum is invaginated on the finger and pushed into the ring. A double-threaded needle is thrust into the bottom of the cul-de-sac, brought out through the abdominal parietes, the needle withdrawn, reinserted at a little distance, withdrawn and the threads tied. This cul-de-sac, if left to itself, would prove a nuisance on account of the retention of moisture, and the skin was therefore denuded of its cuticle by repeated cauterizations with ammonia, and when granulations sprang up the surfaces were made to adhere by pressure. Bransby Cooper proposed to destroy the cuticle of the invaginated portion by actual cautery at a single operation. This method has fallen into disuse, although occasionally revived in our time. The late Dr. Geo. T. Allen, of Springfield, Ill., reported fifty cases cured by what was practically Gerdy's method. (Trans. Illinois State Med. Soc., 1867-8.) Wutzer proposed to invaginate the scrotum by a wooden plug having a

curved needle at the end. After the tissues were invaginated and the needle thrust through the tissues, a fenestrated metal plate was placed on the outside, with the needle projecting through the fenester, and clamped down tightly by means of a screw at the end of the plug. The apparatus is kept in place for about a week and a truss worn for some months. In Wutzer's first series of cases there were fifty-seven cases and no deaths. This operation was very popular in its day, but is now superseded by a method which might well be termed the combination method, by which I of course refer to Wood's method, which not only invaginates the fascia but draws together the pillars. While all these methods have their greatest success in small herniæ and bubonoceles, yet both Gerdy's and Wutzer's are absolutely valueless in those which are so large that an ordinary invagination will not occlude the opening. As Wood's operation is so recent and so well known, I will not in the presence of this audience stop to describe it. Mr. Wood's first case is recorded in the *Transactions of the Medical Society of King's College, 1857-8.*

Lawrence, who wrote the well known treatise on hernia, is frequently but erroneously given the priority of suggesting the drawing together of the inguinal rings by suture. The priority is probably due to those ancient surgeons who operated by incision through the canal. The varieties of suture used are almost endless, and it must provoke a smile to see in every country this operation when performed by any of these sutures described as new. In our country we point with pride to the fact that Physick recommended animal sutures. Levert, Nott and Gross used lead and silver wire, but it is known that Rhazes, the Arabian, described sutures made of harp or lute strings, with which he stitched wounds of the abdomen, and that there is no doubt that metallic suture wires of the less noble metals are really contemporaneous with the gold threads. To prevent the alleged untying of the catgut ligature, MacEwen, of Glasgow, in 1880 proposed to soak them in chromic acid.

Wood's operation has lately taken a new start by reason of the greater care in making incisions; insuring cleanliness; apposition of the parts, the use of germicide solutions and the exclusion of air from

the wound. Dr. H. O. Marcy, of Boston, on October 11, 1871, reported cases treated by this method. Prof. Fayerer, of Calcutta, in *Medical Times and Gazette*, April, 1872, reports fifty cases, of which forty-two were cured. Prof. Annandale and Sir William MacCormac give the priority to Dr. Chas. Steele, of Bristol, but Dr. Steele's first case was reported in the *British Medical Journal*, Nov. 7, 1874, more than two years after those of the Boston surgeon.

Marcy and Isidor Israelsohn are undoubtedly the pioneers in this application of antiseptic surgery.

Dr. Raye, of Calcutta, in the *Trans. Med. Soc. of Calcutta*, 1883, reports sixteen cases with twelve cured, one died, and two relieved, one under treatment on the date of the report. Swinton Edwards in 1884 reported three cases cured by this operation. He used drainage, iodoform, gauze packing, and an elastic bandage.

In a discussion in the Liverpool Medical Institution in 1883, opened by Mr. George Hamilton, Dr. Alexander stated that he had performed the radical cure thirty times without any death. Mr. Banks stated that he had operated on more than fifty cases, but preferred wire to catgut. Mr. Puzey thought that the patients should be kept in bed for a considerable time, as if the patients got up too soon the tumor reappeared. This caution, in my judgment, is a necessary one, for in one of my own cases operated upon in May, 1886, at the Providence Hospital, Washington, an inguinal hernia was converted into a bubonocele by the reopening of the internal ring. The patient in this case was allowed to get out of bed as soon as the wound was healed.

In a debate on the radical cure of hernia in the Academy of Medicine in Dublin, March 12, 1884, there was entire agreement both as to the propriety of the operation and of the excision of the sac. As to the general results of Wood's operation, Mr. Wood himself reports that out of 339 cases without special antiseptic precautions, and with wire sutures, ninety-six were cured, seven died, and fifty-nine failed; in the remainder the result could not be ascertained. The proportion of the unknown cases was presumably in about the same ratio. Nussbaum states that in half his cases the hernia returned, and in those

reported by Leisrink one-third returned. There can be no doubt, then, that while much good has resulted from the operation, there is yet much needed to perfect its details. I wish it understood when I speak of Wood's operation, I mean as at present performed; that is, the "open" operation. Dr. Robert Abbe, of New York, recently reported twenty-one cases of this operation, with two deaths; in one case, however, the death was due to suppuration following an operation for varicose veins of the leg, which had been operated upon at the same time. His cases were too recent to give any account of the permanency of the cure.

One modification of Wood's operation has been proposed by Mr. W. Dunnett Spanton (*British Medical Journal*, Dec. 11, 1880), which consists in bringing the pillars together by means of a corkscrew wire mounted on a handle. A small puncture being made from above, the wire is placed in position, and forced down by a screw motion, the screw entering the pillars alternately. Mr. Spanton has operated on thirty-four cases with the screw and catgut suture, with no deaths. This proceeding differs little in principle from that practised by Dr. Grenville Dowell, who used a needle with a deep curve, and brought the pillars together by suture. Dr. Dowell reported in his book published in Philadelphia, 1876, ninety-six operations by nine different operators with a result of eighty cures and sixteen failures.

Accidents may follow Wood's operations as well as the others, such as sloughing, peritonitis and tetanus. On this last point Surgeon-Major French reported (*Indian Annals of Med. Sci.*, 1876) that two of his six cases were followed by tetanus. He thinks it likely that the climate may have been at fault. From the statistics which I have had compiled from official reports on file in the Marine Hospital Bureau at Washington, it appears that in Calcutta for the year 1884 there were 1,137 deaths from tetanus, out of a total number of deaths from all causes of 12,823—nearly 9 per cent.; so there really seems to be more than a conjecture back of Surgeon-Major French's suggestion. The record by months is as follows:

TETANUS IN CALCUTTA, INDIA, 1884.

	Deaths from tetanus.	Total deaths from all causes.
January.....	64	919
February.....	61	964
March.....	114	1,516
April.....	105	1,709
May.....	98	1,332
June.....	71	797
July.....	85	729
August.....	101	785
September.....	102	816
October.....	112	869
November.....	115	1,260
December.....	89	1,127
Total for year.....	1,137	12,823

Percentage of deaths from tetanus to total deaths nearly 9 per cent.

“In Sweden an ‘improved’ operation for the radical cure of hernia has for some time past been practised by Drs. Svensson and Erdmann, surgeons to the Sabbatsberg Hospital at Stockholm. A ligature is applied to the neck of the hernia, and the sac is cut off below the ligature, the contents being previously examined by means of an incision into the sac and returned; or if only omental, excised, together with the sac. In congenital herniæ the upper part of the sac only is removed, and where the large bowel is included in the hernia and adherent to the sac wall, this, after being separated from the surrounding tissue, is returned together with the large intestine, and the rents of Poupart’s ligament united by sutures.

“The dressing employed is iodoform and boracic acid, the wounds being washed with sublimate solutions. Since this has been substituted for carbolic gauze, abscesses, which used to occur frequently, have become rare. Of the forty-eight cases thus operated on, none of which were selected, thirty-eight were permanently cured; at least, no return of the hernia occurred within six months; and in the cases where a return did take place, which amounted to 20 per cent., the condition was very much less painful and distressing than it had been previous to the operation.

“Sabbatsberg Hospital has now been opened six years and a half, and during that time 300 cases of hernia have been admitted, about 200 of these being

operated on with the knife, a milder procedure, consisting of alcoholic injections, being employed in most of the earlier cases.

"Not a single case proved fatal, though some of the herniae were very large, some reaching within three or four inches of the knee." (*Med. and Surg. Rep.*, Philadelphia, 1886, ix, 115.)

In regard to the necessity for the recumbent position in the after-treatment of these cases, it should be the rule, and neglect of this rule seems to be the cause of failure in many cases of recurrence. Ravin, indeed, many years ago proposed position as the only rational means of cure, applying the principle that any cavity in the body, when unused, became filled up, or its walls agglutinated by a mild inflammatory or adhesive process.

Two other methods of treatment, each popular enough in their day, I will not stop long to discuss. I refer to the injection, and the seton through the canal. Velpeau, in "Nouveaux éléments de Médecine opérative, par A. L. M. Velpeau, Paris, 1839," stated that in the application of the fact that iodine exerted a wonderfully curative influence on serous membranes in general, as instanced in hydrocele, he had used injections of iodine for the radical cure of hernia in 1835. He again used it at the Charity Hospital in 1840, and this method being a great advance upon those then in vogue, became the favorite one in Paris. It was used in America by Pancoast of Philadelphia in 1836, who claims priority; by Dr. William Jayne at the Penitentiary in Illinois in 1840, and a few years later by Heaton, of Boston, who changed the fluid finally to the fluid extract of *quercus alba*, but for many years kept his remedy a secret, for which he was tried by the American Medical Association. After Velpeau all Paris began to use iodine injections, and new trocars and canulas figure in the reports and theses of the period. Nélaton, Ricord, Jobert, Maissonneuve and Follin invented "new" trocars. Some opened the sac with a bistoury, and others, as Jobert, plunged the trocar directly into the sac. The statistics were, as usual, at first highly favorable, but finally deaths from peritonitis began to be frequently noticed, and the operation became somewhat restricted in its application. Hea-

ton's injection being milder in its operation, and injected into the pillars and aponeurotic fibres instead of the sac, still survives, having been, as one may say, rejuvenated, by the twisted and altogether wonderful syringe of Warren.

Dr. Luton, of Reims (*Bull. Gén. de Théráp.*, 1877), proposed the injection of 10 to 15 drops of salt water.

The introduction of the seton is probably due to Rattier in 1835, but, as may be gathered, most claims of priority, in the present state of literature, are somewhat problematical. Dr. J. W. Riggs, of New York, in 1858, revived the seton and invented a needle for that purpose, as did Dr. Armsby, also of New York. Dr. J. M. Carnochan (in *Am. Med. Gazette*, vol. ix, 1858), reports cases cured by the "Riggs method," and Dr. R. Thompson reported a "new" instrument, carrying the seton through the inguinal canal, to the Ohio Medical Society in 1859, but the seton, for some reason or another, has gone to join the iodine injection, and the acupuncture practice of Bonnet (1837). Various other methods of plugging the ring are recorded, the autoplasty of Jameson, of Baltimore, Langenbeck and Graefe, and finally the testicle itself. Dr. Chas. T. Hunter recorded a case where by the patient constantly pressing the testicle up into the ring it became fastened there, and the patient was cured. Dr. Hunter thought this a unique case, but Michel (*Am. Jour. Med. Sci.*, Oct., 1878) speaks of this as an old Spanish method. It was not, however, peculiar to Spain, although Henry Momehm, writing in the early part of the seventeenth century, calls it a Spanish method, for both Garengeot and Scultetus in condemning it mention it as a recognized surgical procedure.

Let us pass the operations of Mayor by ligatures fastened on sponges, and his triangular "cravat" bandage, proposed in 1836; the punctures proposed by Anderson, of Baltimore, in 1835; the Cresson operation of 1838; the Belmas operation of gelatine strips in the canal; the modern revival of the suture royal by Czerney, to the last and most prevalent treatment, by continuous compression.

I have before spoken of the early invention of the truss, and you all know that there would not be space in this hall to exhibit the various modifications that

have been invented. Hard pads, soft pads, air pads (Jeanney, 1838), springs and no springs, ratchets, catches and binding screws of infinite variety. Although radical cures of inguinal occur in mild cases, it is well known that trusses are in the main merely palliative; that permanent cures are rare, and closely confined to those of recent date with small openings, yet we go on ordering trusses for our patients just as if there were no way to increase the proportion of cures, and as if a truss could not as well be worn after an operation, if need be, as before it, and as if no recent advances in abdominal surgery had been made. As no logical reason can be given for a failure to accept the view that there has been an advance, I perhaps need not say that *I favor in all cases affording even a reasonable prospect of cure, an operation therefor, and that all cases whatsoever of bubonocele should be operated upon.*

Spontaneous cures of hernia, while uncommon, occasionally happen, and there are several cases on record. The most recent case is that by Dr. Streeter, of Glen's Falls, N. Y., where in consequence of suppuration in the inguinal canal following a bubo, the canal was closed, and the hernia cured. The patient had previously worn a truss for a year, without avail. But a surgeon would be hardly likely as a general practice to recommend his patients to acquire a bubo.

I conclude by quoting the remark of Sir Spencer Wells, made many years ago:

“But the surgeon who cures hernia radically with certainty and safety, is a greater public benefactor than he who saves the life of his patient in strangulated hernia, as he not only relieves a larger number of his fellow creatures from the suffering and inconvenience of wearing a truss, but he averts the danger of strangulation to which they are continually exposed in a greater or less degree through every period of life.”

